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A Preliminary Examination of ACT Content and Instruction Alignment

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Introduction

Kentucky's public high school students face a variety of tests. Some tests are mandated by their state, district, high school or their chosen university; others are voluntary. This study focuses on two such tests, the American College Test (ACT) and the Kentucky Core Content Test (KCCT). These tests are important to stakeholders within the state for different reasons. The ACT, on the one hand, is important to a self-selected group of students and their parents, as it is used as an admissions assessment by Kentucky colleges and universities. Students can also earn Kentucky Educational Excellence Scholarship (KEES) money based, at least in part, on obtaining favorable ACT scores. The KCCT, on the other hand, is important to teachers and administrators because its results are used in the statewide accountability system known as the Commonwealth Accountability Testing System (CATS). Under CATS, public schools are required to test nearly all students in a variety of subjects and to raise student performance so that by 2014, schools will be classified as "proficient." Under Kentucky's testing system, schools are held accountable for their students' performance. There is no provision for student-level accountability beyond individual score reporting to schools and parents. For example, students cannot be denied a high school diploma for poor performance on the KCCT.

Table 1 shows in which grades Kentucky's public high school students take the tests that are the subjects of this study[1]. Note that students may not take the ACT if they are not interested in attending a college or university or if their selected college or university has other requirements such as the SAT. Students may take the ACT several times during their high school careers; typically they do so late during their junior year or early in their senior year. This relative freedom of choice connected with the ACT is indicated by boldface Xs in the table. The mandated KCCT tests are represented by italicized Xs.

Table 1. Grades in which Kentucky public high school students take KCCT and ACT tests

Grade	KCCT reading	ACT	KCCT math	KCCT on-demand writing	KCCT writing portfolio
10	*X*				
11		**X**	*X*		
12		**X**		*X*	*X*

The relationship between these two tests is of interest, as well. First, there is a common perception that inconsistent performance in Kentucky on the ACT[2] may be linked to an emphasis

[1] Because of the small size of this study, researchers focused on only a portion of KCCT tests that Kentucky public high school students take.

[2] According to a Kentucky Department of Education press release dated Sept. 5, 2003, and titled "Progress in ACT and SAT Scores," Kentucky ACT scores declined in 2002 to 20.0 from 20.1 the previous year. However, ACT scores for the state increased in 2003 to 20.2. The ACT national averages for 2002 and 2003 held steady at 20.8.

by Kentucky teachers on the Kentucky Core Content for Assessment, to the detriment of the ACT. Secondly, some are advocating the use of ACT scores rather than KCCT scores in the school accountability system.

Previous work by HumRRO researchers (Hoffman, 1998; Bacci, Koger, Hoffman, & Thacker, 2003) showed some relationship between the ACT and KCCT tests:

1. Students who tend to perform well on one test tend to perform well on the other:

2. Schools that improve on one test can be expected to improve, relative to all schools, on the other;

3. The biggest declines on the ACT tend to be experienced by schools showing the least improvement on the KCCT.

This study will expand the previous work by focusing on content similarities and differences between the tests.

Methodology

HumRRO researchers used a cause-and-effect model (Figure 1) upon which to base this study. The figure depicts the idea that KCCT and ACT each have content objectives that drive the development of the tests, with contents for both tests having roots in national standards. In addition, instructors' interpretations of KCCT and ACT content standards may be expected to influence the design of their course curricula. KCCT and ACT are not likely to be the only factors that influence teachers' beliefs about what students need to know in preparation for college, so the figure contains a summary box representing teachers' global beliefs about the instruction they should provide to prepare students for college performance. Those global beliefs may be influenced by Kentucky Core Content and ACT, but they may also be strongly influenced by outside experiences such as training for teaching Advanced Placement courses. These perceptions mix with other unspecified factors (e.g., textbooks, teacher habits, school traditions) to create the curriculum that is experienced by students. Curriculum presumably influences students' performance on KCCT, ACT, and for students who attend, performance in college. The strength of the relationship presumably depends on the extent to which curriculum is consistent with KCCT and ACT content (depicted as arrows intersecting the arrows between curriculum and test performance), and with actual college requirements (not depicted).

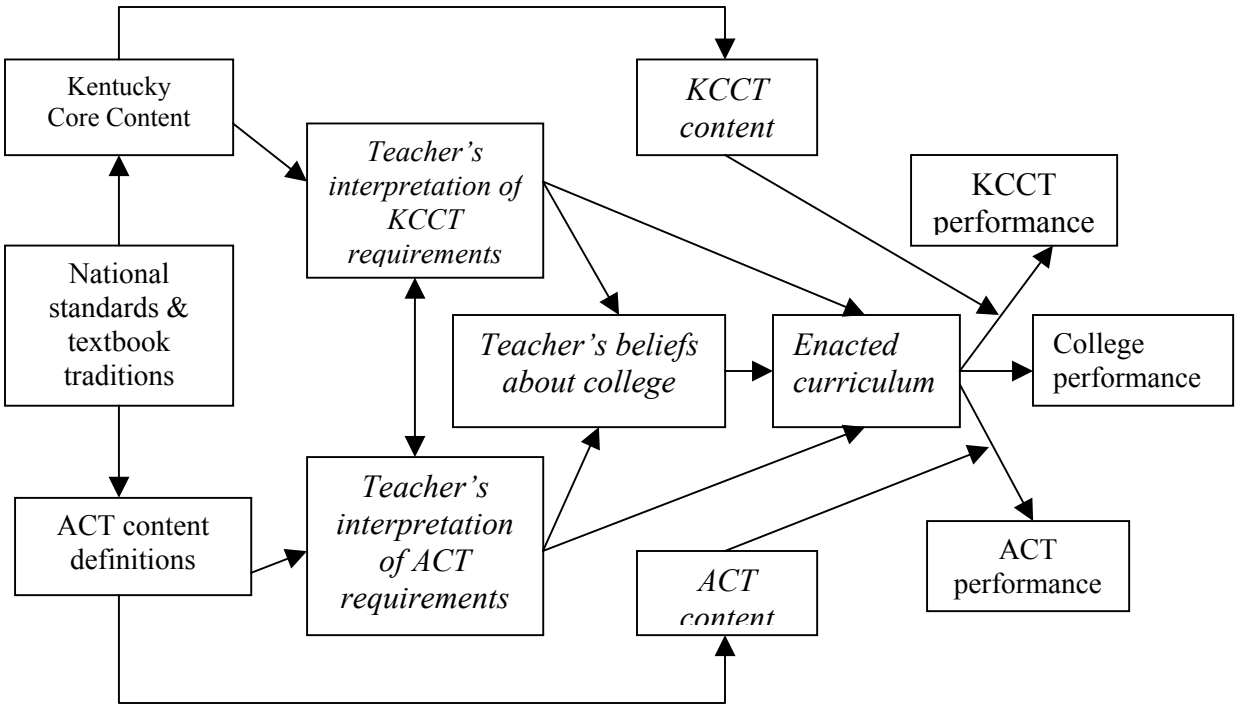

Figure 1. Key variables in understanding the interrelationship between KCCT and ACT expectations and performance.

This study focuses on, and is structured around, the six areas of the figure in italics:

- Teacher's interpretation of KCCT requirements;
- Teacher's interpretation of ACT requirements;
- Teacher's beliefs about preparation for college;
- The enacted curriculum;
- KCCT content; and
- ACT content.

Instead of conceptualizing the study as simply one that examines content alignment, researchers are more broadly concerned about the decisions teachers make when designing instruction. Specifically, researchers wanted to examine the extent to which teachers must make compromises in their instruction because Kentucky Core Content, ACT, and other forces that shape instruction are different and perhaps even conflicting.

After the figure was developed and the areas of study agreed upon, researchers created a semistructured interview protocol (see Appendix). Researchers defined "semistructured" as

having the freedom to probe and follow up on interesting comments as needed. Specific follow up or probing questions were not written in advance.

HumRRO researchers interviewed 5 current high school math teachers and 4 current high school English/Language Arts (ELA) teachers who had been recommended by Kentucky Department of Education personnel. These recommendations were based on teachers' knowledge of ACT and KCCT requirements. Participants were typically department heads at their respective schools. No teachers were contacted who lacked general knowledge about KCCT and ACT, although we recognize that they may exist. This study was not designed to be generalizeable to the population, so we focus on those for whom conflict might reasonably exist.

Interviews were conducted by phone during the first two weeks of February 2004. Typically, these interviews took place during teachers' planning periods or after school and lasted about 40 minutes. Researchers asked teachers to focus on the needs of students who were likely to attend college and who would need to take the ACT for admission purposes. Interviews were not recorded; the researcher took detailed notes as the interview took place. Immediately upon the interview's conclusion, researchers reviewed what had been written and made clarifications as needed. Teacher comments that may appear in this report should not be construed as direct quotes unless they appear in quotation marks.

Analysis

The 9 interviews were analyzed using QSR's N5 qualitative data analysis software program. N5 allows researchers to code interviews using a variety of data, such as demographic information, question number, and concept. N5 can also search for specific words or terms. In this study, each interview was initially coded with basic demographic information, which in this case was simply the subject taught (either math or ELA), and question number. In order to protect teachers' confidentiality, no school or teacher names were used in the report.

Next, the researcher read through each interview independently to obtain a holistic impression and to look for evidence of key concepts that arose during the course of the interview. Only one researcher coded the interviews, due to the small number of interviews. Some concepts used in this report were "life skills," "higher order thinking skills," and "shifting of curriculum;" these will be discussed in the "Results" section. After coding interviews, researchers ran reports to determine, for example, the responses that math teachers gave to Question 5, or concepts that were common to several interviews, such as how many teachers discussed higher order thinking skills. However, we caution against overinterpreting results, again due to the small size of the study.

Results

Teachers' interpretation of KCCT and ACT requirements

Researchers found differences in the way teachers interpret KCCT and ACT requirements. On the one hand, KCCT is part of a state-operated testing system. KDE has prepared documents to assist teachers in preparing students for KCCT tests, and these documents have become widely used. The Core Content for Assessment is one such document; it shows by

subject the content that KDE considers eligible for inclusion on any particular KCCT. Teachers pay attention to what is contained in the Core Content, making sure that they have covered all the "bullets," or content statements, before KCCT testing begins in early spring. Researchers have even heard the Core Content referred to as a teacher's "bible." Other important documents include the Program of Studies and the Academic Expectations, from which the Core Content was derived. It is clear that the use of these documents has been institutionalized. In this study, 7 of the 9 teachers specifically mentioned using the Core Content as the means of learning about KCCT requirements, while 3 mentioned using the Program of Studies[3]. Other responses included professional development (3 responses), school report cards from KDE (1 response), and various KDE publications (1 response).

The answer for learning about ACT requirements, on the other hand, was less clear. The 9 teachers gave a variety of responses, ranging from the ACT website (2 responses), school guidance counselors (2 responses), and ACT publications such as practice ACT tests or booklets (6 responses). Three teachers further noted differences in the amount of information available between ACT and KCCT. One teacher described the ACT information process as "hit and miss," with no coordinated plan to determine needed skills. These same three teachers stated that more information on ACT topics is needed; one suggested that such information come from KDE, while the other two suggested that ACT create and distribute a list of topics similar to Kentucky's Core Content document.

Teachers' beliefs about preparation for college

The next series of questions asked teachers about their beliefs regarding student preparation for college. The first question in this series simply asked teachers what knowledge, skills, and abilities (KSAs) students need upon entering college. Teachers responded in three general categories: responses about specific content (8 responses); responses about life skills, such as time management, study skills, or organizational skills (4 responses); and responses about higher order thinking skills (6 responses).

Responses about specific math content:

- What is included on the Core Content and beyond, including precalculus curriculum such as functions, polynomials, logarithms. University requires more complex fractions…
- In subject content, strong foundation in Algebra, writing and communication skills for math and other subjects…
- Most colleges are requiring students to take and pass college Algebra and Trigonometry, maybe finite math, so students have to be prepared for those when they enter college. Strong Algebra 1, Geometry, and Algebra 2 background; ability to read technical material…

[3] Because some teachers gave more than one response, the total number of responses may be more than 9.

- Need to be strong Algebra students, not just in Algebra 2 but in all three levels of Algebra offered at this school…

Responses about specific ELA content:

- For writing, has students work on reflective narrative and argument; write editorials, reviews and literary interpretation for argument. Also focuses on the four components of reading. Also, vocabulary…and paraphrasing (understanding the basics of what was read).

- Writing and analysis skills. It's less about the particular work they might have read as it is about being able to think about and write about what was read…

- Reading—feels that students don't read enough…Students are not able to complete the ACT reading portion because they are not fluent enough readers, and these are the brightest students in the school.

- Write an organized essay that supports ideas…research and document, broad understanding of various literary genres.

Responses about life skills:

- …handling conflicts.

- …good study ethics and note taking skills…

- …Most have trouble with organizational skills and time management. Says that students are busy in high school with various activities, but that families help them organize. In college, families often aren't around…

- …ability to budget time…

Responses about higher order thinking skills:

- …Try to get students to be able to think, not regurgitate information…

- …need problem solving skills, not just problem solving associated with math, but in general…

- …Also need to be good problem solvers, instead of just doing the mechanics of the problem. They need to know how to teach themselves in case they can't get to a professor; may have to figure out on their own.

- …inference and connecting to one's experience…

- …analysis skills…

- …High school teachers need to push students more into problem solving. Thinks the KCCT open-response questions are a good start to this.

The enacted curriculum

Each day, teachers and other experts make a variety of decisions about what students need to learn. They decide what to teach, as well as what not to teach; they decide when to teach something and how best to teach it. They may even need to decide why they should teach a particular topic or course and who is the best person to teach it. The result of these decisions is the enacted curriculum. The remainder of this section presents findings on various aspects of the enacted curriculum.

Mandating the curriculum

Seven of 9 teachers in this study responded that at least some of their curriculum was mandated by the state or district. Actual responses ranged from 100 percent for a geometry course to 60 to 70 percent for a pre-calculus course; an ELA teacher stated that the on-demand and portfolio portions of the 11th and 12th grade English courses were mandated, as well. Most teachers indicated that well over 50 percent of their curriculum was mandated. Teachers also viewed the Core Content or the Program of Studies as providing the key structure to the mandated portions of the curriculum. Several teachers described efforts to ensure that all "bullets," or content standards, were covered before the appropriate KCCT test through formal measures such as curriculum alignment, the creation of a standards-based unit of study, or common assessments known as "power standards."

An interesting subtopic developed as researchers examined differences in the degree of curriculum mandates between lower- and upper-level courses.[4] Three teachers perceived that they had more freedom to develop curriculum in upper level courses. One teacher who taught geometry as well as pre-calculus estimated that nearly 100 percent of the geometry curriculum was mandated, compared to only about 60 to 70 percent of the pre-calculus curriculum. Another teacher who discussed teaching Algebra 1 and trigonometry said that trigonometry is at such a high level that it is beyond the scope of the Core Content standards. She said that teachers have more leeway in these courses and also said that Core Content is something that is addressed more in lower-level courses. One ELA teacher noted that while she considers her curriculum to be mandated, she believes she has total flexibility in how to teach the curriculum. She offered as an example the readings that she is able to select in teaching the Core Content standards.

What—and what not—to teach

Researchers asked teachers some questions to determine how they translated ACT and KCCT requirements into curriculum decisions. Researchers initially wanted to determine which topics might be omitted or included in the curriculum for a particular testing system. However, teachers' responses indicated that researchers also needed to consider the fact that some topics were not necessarily included or omitted as much as they were simply shifted to before or after the KCCT.

[4] Lower-level courses are generally defined as taking place during the first two years of high school, such as Algebra 1 or Geometry; upper-level courses, such as Calculus or Advanced Placement English, typically are offered in the last two years.

Researchers also found that teachers had more comments regarding topics associated with KCCT than with ACT. These comments appear in the following sections:

Topics included or advanced for KCCT:

- Includes practical, workplace reading. Uses things such as driver's manual, VCR manual, and consumer report charts and graphs.
- …Being more aware of other aspects of reading besides literary reading…tries to pull in various types of writing that would go along with informational, practical reading.
- …Sequences and series, especially as related to Algebra 2…
- Use of specific terms, such as "connotation," that the teacher ordinarily would not use.
- …Re-emphasis of topics that received low scores on KCCT to ensure that these topics are being addressed in several ways and in several courses.

Topics included or advanced for ACT:

- The "mechanics" aspect of mathematics rather than the "why" aspect.
- Different ways to simplify expressions, such as knowing how to convert a decimal to a radical or how to rationalize denominators in pre-calculus…in the real world they will typically use a decimal, not a radical, but the ACT may ask for the radical version so they need to know how to do it.
- Some aspects of trigonometry, such as right-angle trigonometry; also rational functions.
- Grammar in isolation. Most (teachers) deal with it in writing, not as separate topic…
- Logarithms, not studied at great depth, but they are always assessed on ACT. Lots of times this topic is one they don't get until pre calculus. So that's one that is hard to get to for all students, since all don't go on to pre calculus.

Topics omitted or delayed for KCCT:

- …Exponents and logarithms come at the end of the course and they may not get to it; not allowed to teach fractals…
- Constructions in geometry (those that involve use of ruler and compass) delayed until after KCCT.

- Topics such as hyperboles and rational functions delayed until upper level courses.

- It can cause us to omit the amount of literature in English class to get in other kinds of reading that we may not feel as comfortable with, especially in 9th and 10th grades.

- General statement specifying that the Core Content has priority. If time permits after Core Content is covered then omitted topics would be covered.

Teachers did not list specific topics omitted or delayed for ACT.

Curriculum percentages

Teachers were asked to consider what percentage of their curriculum addressed only ACT-related topics, only KCCT-related topics, and overlapping topics. Of the five responses regarding the percentage of only ACT-related topics in their curricula, three gave low percentages ranging from 5 percent to 20 percent; one stated that a "minute" part of the curriculum focused on topics related to one testing system and not the other, and one ELA teacher replied that she does not worry about such distinctions. Instead, she focuses on fluency and comprehension skills, since these reading skills are valuable for any section of the ACT.

As expected, responses to KCCT-only percentages were different, with two ELA teachers giving responses ranging from 80 to 90 percent. Two other ELA teachers, who both happened to teach upper-level courses, reported that the writing portion of their curricula are considered KCCT-only; they did not give specific percentages, however. The upper-level ELA courses are still preparing students for the on-demand and writing portfolio KCCT tests given in 12th grade, while lower-level ELA courses are preparing students for the KCCT reading test given in 10th grade. The fifth response, from a math teacher, said that preparing students to answer open-response questions is a KCCT-only topic, since ACT has no open-response questions. This teacher also declined to state a percentage.

Four teachers also responded to the question regarding overlapping curricular areas. Two ELA teachers, one upper-level and one lower-level, stated that reading and its associated skills is the biggest area of overlap between the two systems, with the upper-level teacher stating that about 60 percent of the curriculum dealt with analysis skills in reading. Two math teachers also said that there is a great deal of overlap between ACT and KCCT curricular topics, with one stating about 60 percent and one stating "most."

How ACT and KCCT work together

Interviewers asked teachers if they thought the requirements of ACT and KCCT conflicted with each other in the curriculum, if they complemented each other, or if they were neutral, having little impact one way or the other. Eight teachers offered responses; the majority of responses indicated that teachers saw the two tests as complementing each other at least to some degree. Responses follow; note that several teachers discussed several topics within their response so the total number of responses is greater than 8.

ACT and KCCT seen as complementary

- …easy to put them together. ACT is only multiple choice; ACT and KCCT complement each other. (math)
- In math, she thinks the tests are quite complementary, especially in geometry…(math)
- He sees the two tests as complementing each other. ACT is skills based and students need to work fast. KCCT has the open response with problem solving. (math)
- …Reading on both ACT and KCCT have a similar purpose and form…(ELA)
- Cover a lot of the same content…(math)
- Both KCCT and ACT have reading portions, so she considers this as a way that the two tests support each other…(ELA)

ACT and KCCT seen as in conflict

- …writing he sees as a conflict. Says that ACT writing deals with parts (grammar, rhetoric), while KCCT deals with holistic writing (the entire aspect of writing). (ELA)
- KCCT doesn't really have a grammar test. Grammar element may be more of a conflict…(ELA)
- …However, she noted that the state test does not have grammar and rhetorical skills while ACT does. (ELA)

ACT and KCCT seen as neutral

- …Whole writing is more KCCT than ACT. Doesn't see this as a conflict, but not necessarily as complementary, either…(ELA)
- From students' perspective, they understand the impact of ACT score on college and college scholarship. That means something to them. Students can take AP as dual credit with a certain ACT score, so they see the importance of that. KCCT seen as a chore. So these tests don't run in concert. However, she recognizes that if they do well on one they should be able to do well on the other. (ELA)

Teacher unsure

- Reading—don't know…(ELA)

Curriculum shifts

Researchers encountered several types of curriculum shifts during their analysis of teacher interviews. The first two types, within-grade shifts, and across-grade shifts, appeared to develop to accommodate KCCT demands. The third type, KCCT-ACT shifts, appeared to accommodate KCCT demands in lower-level grades and ACT in upper-level grades. These shifts are discussed in this section.

Within-grade shifts typically are done to ensure coverage of certain topics, or more specifically, Core Content standards, by delaying or advancing topics as needed within a single grade or course.

Across-grade shifts seem to occur more frequently in the ELA curriculum and may indicate the impact of the KCCT test schedule on curriculum. As noted in Table 1, the KCCT tests given in ELA are divided between reading in 10th grade and writing (on demand and writing portfolio) in 12th grade. ELA teachers appear to be adapting their curricula to "fit" the KCCT testing schedule. In fact, all four ELA teachers in this study mentioned variations of this across-grade shift as something that they themselves do or that other ELA teachers at their school do:

- 9th and 10th grades have more emphasis on reading. 12th grade is more focused on the KCCT version of writing…(upper-level ELA teacher)

- Since KCCT reading test is in 10th grade, says that she is less focused on teaching some aspects of reading, such as "real world reading," and more focused on literature to prepare them for AP in their senior year. (upper-level ELA teacher)

- KCCT has had a tremendous influence on the 9th and 10th grades. More influence on reading. Says this shift is sometimes dangerous. As department head, she has teachers of 11th and 12th grades who almost abandon reading to focus on writing and portfolios. Believes that they are not sending students out with full literacy due to this shift in priorities, and not preparing students as they should. Difficult issue for her as department head. (upper-level ELA teacher)

- She doesn't cover the KCCT at all in 12th grade except for the on-demand writing portion of the CATS assessment…says that 9th and 10th grades are focused on preparing students for the KCCT reading and CTBS…(lower- and upper-level ELA teacher)

As the KCCT math test is given only in the 11th grade in high school, this type of shift does not appear to be taking place among math teachers.

The final type of shift, KCCT-ACT, emphasizes content for the different testing systems at different times, either within or across grades. For example, some teachers reported focusing on ACT content near the end of the school year after the KCCT test for their subject had been

given; others reported focusing more on KCCT in lower-level courses and more on ACT in upper-level courses perceived as being beyond KCCT.

- In Algebra 2, for the most part it's KCCT that's the focus. End of spring semester will focus on ACT…pre-calculus focus on ACT…

- …Students receive grammar instruction in 8th grade, but there is a "barren space" as far as grammar instruction in 9th and 10th grades. There is a return to grammar in 11th and 12th grades to prepare them for ACT.

- Juniors and seniors focus heavily on the ACT more so than underclassmen…KCCT is more of an early focus.

- Definitely sees a change in focus between certain grades with ACT and KCCT. Says that 9th and 10th grades are focused on preparing students for the KCCT reading and CTBS, while 11th and 12th grades are shifting more towards ACT preparation…

- After the CATS tests, she teaches geometry proofs, congruent triangles that are also on the ACT…Tries to make sure after CATS that they hit ACT.

ACT and KCCT content

Researchers also asked teachers how consistent their curricula were with ACT and KCCT tests.

Three teachers responded that they thought their curricula were consistent with both testing systems; one of the three, who teaches lower- and upper-level math courses, noted that she needed to do a little better job of keeping up with ACT requirements and would like ACT to provided a list of concepts similar to the Core Content.

Four teachers thought their curricula were consistent with KCCT content. A sample of responses follows:

- Sees curriculum as consistent with elements of reading, although it moves away from real world reading. It is very consistent with writing. (upper-level ELA teacher)

- Thinks 10th grade curriculum is pretty consistent with KCCT content. (lower- and upper-level ELA teacher)

Results were not as uniform for ACT consistency. One teacher, an upper-level ELA teacher, reported that she makes her curriculum consistent with ACT by teaching grammar and reading skills, while another teacher reported that the 10th grade curriculum is not very consistent with ACT. One teacher, a lower- and upper-level math teacher, was unsure. The teacher reported not being as familiar with the outline, or what the exact topics are. The teacher also said that she might stress in class that a certain topic was on the ACT if she knew what they were. She also suggested that ACT provide an outline of topics for teachers to use.

We note that ACT is planning to add an optional writing test in February 2005 (http://www.act.org/aap/writing/index.html). It is uncertain what impact this addition may have on curriculum content and alignment at this time.

Perceived testing differences

This section presents teacher responses that show how their perceptions of the ACT and KCCT testing systems differ. These perceptions deal with various issues, including actual test administration, apparent value of the tests to various stakeholders, test preparation, and perceived test purpose. We note that these comments arose during the course of the interviews; for example, specific questions about student motivation had not been asked as a regular part of the interview.

Test administration

- The fact that ACT is a timed test is an issue in that students need to be able to work quickly…However, the KCCT is not timed as is the ACT…ACT is skills based and need to work fast. (upper-level math teacher)

- …Yet, she says that they are not able to complete the ACT reading portion because they are not fluent enough readers—and these are the brightest students in the school…Says she has just recently started doing more timed reading tests that mirror ACT reading tests…Says that practicing test-taking skills is something that they have never needed before. (upper-level ELA teacher)

- …Also, ACT is a timed test, while the KCCT is not. Said that this was an important difference between the two tests. (lower- and upper-level ELA teacher)

Value to stakeholders

- ACT is a big issue at this school. They are concerned about scores on the ACT…Principal stresses ACT, they pay attention to ACT scores…Primary is KCCT, but ACT is very important. (upper-level math teacher)

- Really advanced students might not take the KCCT as seriously as they should. They think of it as a test of more lower-order skills…Said that for students, ACT is more important in the long run, since they compete for college scholarships and get attention of colleges with good scores. KCCT, on the other hand, is more a matter of school and personal honor to students. (upper-level ELA teacher)

- Many students and parents have requested extra ACT help (tutoring or preparation) in math…Secondary importance (to KCCT) is ACT. All high school math teachers know how important that (ACT) is…When you ask parents and students what's important, they say the ACT. However, teachers

and administrators see the importance of the KCCT because of the accountability issue (upper-level math teacher)

- If teachers are negative, kids will be, too. Students got the idea that the KCCT wasn't worth it, and they had to get the idea from somewhere…From student's perspective, they understand the impact of ACT score on college and college scholarship. That means something to them. Students can take AP as dual credit with a certain ACT score, so they see the importance of that. KCCT is seen as a chore. (upper-level ELA teacher)

- …Also said that students are not as motivated on the KCCT as they are on the ACT…in 10th grade, the KCCT is very important, the ACT is not as big an issue. (lower- and upper-level ELA teacher)

Test preparation

Although there were no questions in the interview specifically addressing test preparation activities, several teachers volunteered information about such activities. Interestingly, there was no mention of KCCT test preparation, perhaps because it has become so integrated throughout the curriculum and the school year through the use of the Core Content and other KDE-supplied documents. Five of 9 teachers reported on ACT test preparation activities; their responses follow:

- Have practice booklets and look at test questions. (lower- and upper-level math teacher)

- Has also taught ACT prep courses before…They do practice ACT tests. (upper-level math teacher)

- This teacher took the ACT practice exam with his classes a year or two ago. (upper-level ELA teacher)

- Many students and parents have requested extra ACT help in math. Now offering an ACT enrichment course held once a week with materials that we pull together. This is its second year. (lower- and upper-level math teacher)

- Students also ask her to help tutor them to prepare for ACT. Says she has just recently started doing more timed reading tests that mirror ACT reading tests…Says that practicing test taking skills is something that they have never needed before. (upper-level ELA teacher)

For a different idea on test preparation, consider the following comment:

- Doesn't teach to a particular test. If they do well in this class, they'll do well on the test. If the teacher is doing the job well, the other stuff will be covered. (upper-level ELA teacher)

Perceived test purpose

Two teachers volunteered comments concerning their beliefs about the tests' purposes:

- Thinks the KCCT is designed so that every single student will be exposed to and master the "bullets" (content standards). With the ACT, she thinks it is designed for the top-level student to show what he or she can do…The ACT is seen more as a test of what level is the student performing at, while she would like every student to be able to master the KCCT. (lower- and upper-level math teacher)

- The KCCT is what students should have. This is the least they should have. (upper-level math teacher)

Discussion

This report, due to its small sample size, is not generalizeable to the full population of Kentucky teachers. However, it has brought forward some ideas that are worthy of additional study in an expanded format.

The timing of the KCCT reading and writing tests may be contributing to the compartmentalizing of instruction and curriculum between lower and upper high school grades in ELA departments. HumRRO researchers have encountered similar situations in earlier studies (Hoffman, Harris, Koger, & Thacker, 1997; Harris, Hoffman Koger, & Thacker, 1998) in which the timing of KCCT tests in middle school impacted the curriculum. As an example, the KCCT science test is given in 7th grade, while the KCCT math and practical living/vocational studies tests are given in 8th grade. Several teachers reported the virtual elimination of 8th grade science from the curriculum. That vacancy was then filled with an additional math course or a "quasi-science" course designed to cover the practical living/vocational studies content. This was a concern both to 8th grade science teachers and high school science teachers, who complained that students were not being adequately prepared for the high school KCCT science test, given in 11th grade. At least one ELA teacher in this study voiced similar concerns, stating that some 11th and 12th grade teachers had stressed writing over reading instruction; the result was, in her opinion, students who were not as fully literate as they needed to be. Since reading is a part of the ACT assessment battery, it might be valuable to investigate how much and what type of reading is being covered in upper grades, along with the focus of instruction, and if it is seen as supporting the type of reading tested on ACT.

The amount of information available about possible ACT test topics is problematic, at least for several teachers in this study. They complained that they often did not know what topics might appear on ACT, compared to the state information system, which includes the Core Content for Assessment and Program of Studies, designed to support KCCT. It would likely be useful to investigate whether there are links between ACT scores and the way that teachers, schools, or districts obtain information about ACT test topics and requirements.

The ACT writing test (http://www.act.org/aap/writing/index.html) currently in development will be offered for the first time in February 2005 for students entering college in

fall 2006. The ACT website describes this as an optional, 30-minute test. Students will take it if required to do so by the institutions in which they are interested in attending. Since Kentucky already has a strong writing requirement in the form of on-demand prompts and portfolios, it will be interesting to see how Kentucky students who take the ACT writing test compare to students from around the country and to track the requirements of postsecondary institutions within the state to see if they begin requiring the ACT writing test. It is not clear at this time if teachers realize that the ACT writing test will be offered soon. No teachers in this study mentioned it, nor were questions concerning it a part of this study.

Conclusions

It does appear that teachers in this study are focusing instructional and curricular efforts toward KCCT, and any time remaining after that is dedicated to other issues such as ACT. However, teachers and schools also recognize that they cannot afford to ignore the importance of the ACT to students and parents, since ACT scores are used as an admission tool for Kentucky's public postsecondary institutions and to award KEES scholarship funds. We note that Kentucky public high school students continue to make progress on both assessments. From 1999 to 2003, for example, Kentucky public high school students posted a mean 7.04-point increase on KCCT reading, an 8.30-point increase on KCCT math, and an 8.37-point increase on the KCCT writing total (on-demand and portfolio)[5]. On ACT, as previously noted, students showed a slight increase of one tenth-point, from 20.1 to 20.2 during the same time period, while national ACT scores declined two tenths of a point, from 21.0 to 20.8. The number of Kentucky students taking the ACT has also risen, from 24,942 (62 percent) in 1990 to 29,877 (73 percent) in 2003[6].

Researchers also heard from teachers in this study that various curriculum shifts were taking place to accommodate demands of the testing systems. For example, one type of curriculum shift involved teaching KCCT content before KCCT testing, and teaching ACT content after KCCT testing within a single grade. A second type of shift involved the ELA curriculum. ELA teachers reported that reading received more emphasis in 9th and 10th grades, with writing emphasis occurring at the 11th and 12th grades. This was due to the KCCT testing schedule which tests reading at the end of 10th grade and writing at the end of 12th grade. A third type of shift appeared to focus on KCCT content in lower-level grades and ACT content in upper-level grades.

Some teachers reported differences in content between the testing systems. ELA teachers, for example, referred to an emphasis on language mechanics such as grammar, punctuation, and rhetoric on ACT that was not found on KCCT. Reading, however, was seen as an overlapping content area between ACT and KCCT. Some math teachers, on the other hand, felt that there was a more clear-cut division between ACT and KCCT content. One math teacher described pre-Calculus as being beyond the scope of KCCT, while another teacher commented that logarithms are always tested on ACT, but that topic is often not covered until pre-Calculus. Since not all students take pre-Calculus, it is hard for all students to get that information, the teacher noted. A

[5] Information obtained on the KDE website from a press release dated Dec. 7, 2003 and titled "Progress in the Commonwealth Accountability Testing System."

[6] Information obtained on the KDE website from press release 03-050, dated Aug. 20, 2003 and titled "Kentucky ACT scores move up since last year; state's gains outpace nation's."

third teacher noted that a small amount of Trigonometry is on ACT and that they are expected to prepare students for it, as well.

Finally, teachers in the study described differences in the tests' format and administration, yet they concluded that the tests were largely complementary. The ACT, for example, is a timed, multiple-choice test in which students must have mastered skills and mechanics in order to work quickly. The KCCT, on the other hand, is untimed and has a combination of multiple-choice, open-response, and writing components. It demands in-depth responses and uses authentic assessment (testing writing by having students actually write), and provides the time in which to complete this type of assessment. The addition of an optional writing component to the ACT, as previously noted, will be an interesting development to examine in the future.

While there is evidence that the KCCT and ACT are causing teachers and schools to react, there is not a great deal of evidence that the reactions of teachers and schools represent a conflict of interest. Most teachers described the tests as complementary. This study was designed, in part, to investigate if teachers and schools were adopting methodologies that might result in increased KCCT scores and declining ACT scores. Given the consensus of teachers responding to these interviews and the results of the previous correlation studies (Hoffman, 1998; Bacci, Koger, Hoffman, & Thacker, 2003) there is little evidence that competing methodologies are responsible for the apparent disparity. This study does not support the need for a larger more generalizeable effort to investigate teachers' pedagogical reactions to KCCT versus ACT.

References

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Appendix

We're taking a look at the relationship between the ACT and the KCCT—we recognize that both are important to Kentucky, the ACT because it is used as a college entrance exam and students can earn KEES monies by scoring well on it, and the KCCT because it is used as a measure of accountability. So they are both important, but perhaps in different ways. We're also going to look at the role that teachers play in this relationship, since teachers design and deliver instruction.

We already know several things about the relationship between ACT and KCCT—

- Generally, students who do well on one of these tests tend to do well on the other;
- Schools that improve on one test can be expected to improve, relative to all schools, on the other;
- Biggest declines on ACT tend to be experienced by schools showing the least improvement on KCCT.

First of all, I'd like to ask you what grades and courses you teach…

For the remainder of this interview, I'd like you to focus on one particular course and the students in that course who will likely go on to college. Tell me what course you have selected.

TEACHER'S INTERPRETATION OF KCCT REQUIREMENTS

- A1. How do you typically learn about KCCT requirements?
- A2. Does the KCCT cause you to include certain topics that you ordinarily would not include? What are those topics?
- A3. Does the KCCT cause you to omit certain topics that you ordinarily would not omit? What are those topics?

TEACHER'S INTERPRETATION OF ACT REQUIREMENTS

- B1. How do you typically learn about ACT requirements?
- B2. Does the ACT cause you to include certain topics that you ordinarily would not include? What are those topics?
- B3. Does the ACT cause you to omit certain topics that you ordinarily would not omit? What are those topics?

TEACHER'S BELIEFS ABOUT PREPARATION FOR COLLEGE

- C1. Briefly describe the knowledge, skills, and abilities (KSAs) a student needs upon entering college…
- C2. …and the contribution of your course to those KSAs.
- C3. Describe the interaction between the KSAs and ACT requirements.
- C4. Describe the interaction between the KSAs and KCCT requirements.

- C5. Are there other curricular requirements (for assessment or otherwise) that impact the KSAs students must have for college? Describe and comment.

The next series of questions will ask about curriculum development of your course.

ENACTED CURRICULUM

- D1. How important is the ACT in developing your curriculum?
- D2. How important is the KCCT in developing your curriculum?
- D3. Which one is more important?
- D4. Why?
- D5. What other factors are important in developing curriculum?
- D6. Roughly what percentage of the curriculum covers only ACT-related topics? List these ACT-only topics.
- D7. Roughly what percentage of the curriculum covers only KCCT-related topics? List these KCCT-only topics.
- D8. Roughly what percentage of the curriculum covers both ACT- and KCCT-related topics (overlapping—covers both ACT and KCCT)? List these overlapping topics.
- D9. What percentage of the curriculum covers other important topics that students need to know but that aren't specifically included in ACT or KCCT? List these other topics.
- D11. How much of your curriculum is mandated/required (either district, school, or department)?
- D12. How much of your curriculum do you develop on your own?
- D13. Are you the only teacher at your school who currently teaches this course?
- D14. If not, then how similar/different is your section of the course from other teachers' sections of the same course?
- D15. Tell me how these two tests—the ACT and the KCCT—either work together or don't in the curriculum—Are there areas of these assessments that are in conflict with each other or do they complement each other (playing off each other's strengths and weaknesses), or is it pretty neutral, neither helping nor hurting the other?

KCCT CONTENTS

- E1. How consistent is the curriculum of this course with KCCT content?

ACT CONTENTS

- F1. How consistent is the curriculum of this course with ACT content?

G1. Finally, I'd like to ask you about the college prep curriculum as a whole in your department, grades 9-12…do you see a change in focus or influence of the ACT or KCCT taking place between certain grades or courses? Comment/describe.